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Each of the three nests that I have found was similarly situated in the middle of thick bushes, growing thickly among others of their kind on the slopes of mountains, forming the hundreds of thousands of acres of brush land, known locally as 'chaparral' or 'chemise,' which is the sole habitat of *Vireo vicinior californicus*. I find this variety only between the altitudes of 2000 and 4000 feet, principally from 3000 to 3500. They appear early in April, and are gone by September. Probably two broods are raised.

A STUDY OF THE GENUS *DENDRORNIS* AND ITS SPECIES.

BY D. G. ELLIOT.

Among the difficult groups in ornithology, the Dendrocolaptidae occupy a prominent position, and the species of the genus *Dendrornis* are not the least puzzling of its members. These bear, as a rule, so close a resemblance to each other, that at times, from descriptions alone, it is impossible to determine exactly which species may be under consideration, and ornithologists have frequently been obliged to transmit their material to those who have access to the types, in order that their examples might be correctly named. Fully aware of the difficulties that other naturalists have had to contend with in their work on this genus, I should never have attempted its revision, had I not been able to obtain a large number of the type specimens described from time to time, and so to have a tangible, indisputable starting point, from which to base my conclusions. Of the thirty-one forms, that have been named as belonging to this genus, I have procured no less than fourteen types, and among the other examples in my possession are some that have been compared and identified with the types of other species by ornithologists who have paid especial attention to these perplexing birds.

My material consists of one hundred and seventy-seven specimens, obtained from the following sources: the Boston

Society of Natural History,—a large series with Lafresnaye's types; the National Museum at Washington,—another large series with the types of Mr. Ridgway's lately described forms; the material in the collections of the American Museum of Natural History in New York, with Mr. Lawrence's types; the specimens contained in the Museum of Comparative Zoölogy of Cambridge; those of the Academy of Natural Sciences of Philadelphia, and some specimens from the collection of my friend, Mr. G. B. Sennett. Many of the specimens in Mr. Lawrence's collections and also in the National Museum have been identified by Mr. Sclater, Mr. Salvin, Herr von Berlepsch and others, and in some instances examples from the private collections of these gentlemen were present in one or other of the series committed to my charge, showing what they considered a certain species to be, at all events at the time they identified that particular example. A change of opinion regarding the proper name to be applied to any specimen of this genus, judging from the labels borne by a number of them, seems to have been admissible, even if of very frequent occurrence.

The types in my possession while preparing this paper, are the following: *D. weddelli* Lafres., *D. nana* Lawr., *D. multiguttata* Lafres., *D. lacrymosa* Lawr., *D. guttatoides* Lafres., *D. triangularis* Lafres., *D. mentalis* Lawr., *D. fraterculus* Ridgw., *D. lawrencei* Ridgw., *D. lawrencei costaricensis* Ridgw., *D. punctigula* Ridgw., *D. albisquama* Lafres., *D. peruana* Lafres. MS., and *D. albirostris* Lafres. MS. Beside these I have a typical specimen of *D. chunchotambo* Tschudi, procured by the describer of the species during his journey in Peru, and typical specimens of *D. rostripallens* Lafres. Of many of the species I have a considerable number of examples, sometimes large series, as in *D. flavigaster* Swain., represented by no less than sixty specimens, so that altogether I think I may consider that my material is as ample as any that may have been at the command of anyone who has paid especial attention to this genus, and far greater and more complete than has been at the service of the majority of ornithologists.

In my conclusions, in so far as the species were represented before me, I have been guided solely by my material, and although I am well aware that in this age, when the 'pendulum' has swung almost to the verge of the 'splitters' limit, to some many of my determinations may not be acceptable, yet I am satisfied that an

examination of my material by any unbiased naturalist, would permit no other conclusions to be arrived at than those expressed in these pages. It is not pleasant to disagree with those working in the same field, and wherever a shadow of a doubt existed, I have preferred to give the benefit of that 'shadow,' if any could be derived from it, to a fellow ornithologist, but when my material caused me to believe that an error had been committed, I have not hesitated to say so, with my reasons for such belief.

I have found that measurements, taken as a basis of scientific value in this group, are of little worth, as examples of the same species vary in their dimensions even from the same locality, and when such differences were considerable I have given the extreme measurements of the specimens before me, beside those of the example described. The length of the bill given is always that of the exposed culmen.

Knowing by experience how extremely difficult it is to distinguish closely allied species of this genus by descriptions only, and not hoping to be more successful in this respect than any of those who have written upon this group, I have constructed a key, containing distinctive characters, or the salient character of each species, by the aid of which, I trust, little difficulty will be met with by any one in deciding what particular species he may have before him. Of course, to those who consider that this genus should contain races, sub-races, etc., not recognized in this paper, and not apparent to the author, the key will only be useful up to a certain point, beyond which they must provide their own conveyance for farther travel. I have not attempted to quote what might be considered a full synonymy for each species, as in many cases where the name only was given, no description having been added, it was impossible to determine with any degree of accuracy what was the species intended. That errors were made, was shown in certain instances, where an author in a subsequent paper had altered the name previously given to his specimen, to that representing quite a different species. It therefore seemed best, when no description was given, and access to the specimen mentioned was not available, that in the great majority of cases no notice of its occurrence should be taken, and that I should confine myself to such references, regarding which there was no reasonable doubt as to what species was mentioned. To cite an instance of the difficulty of

knowing what species was intended by a name only, I would mention the three species, *susurrans*, *pardalotus* and *nana*, which have been confounded together by most writers, but which my material shows are quite separable. To quote any of these, especially the last (which seems not to have been distinguished at all by many authors), where a name only was given, with perhaps no authentic locality, would possibly only serve to perpetuate an existing error. I have therefore given only such synonymy as I was able to verify with some considerable degree of certainty. Seven described species I have not seen, and they are not represented, so far as I am aware, by any specimen in the United States. They are *kieneri*, *ocellata*, *elegans*, *spixi*, *palliata*, *polysticta*, and *obsoletus*.* I have therefore given the original descriptions without any comments, as it is impossible to definitely fix their specific status without seeing the types.

It only remains for me to express my thanks to those gentlemen who have aided me by the loan of specimens, and kindly given such other assistance as was in their power, among whom I would especially mention Mr. C. B. Cory for the large series of specimens and types from the Lafresnaye collection, without which no conclusive or satisfactory paper could be written on this genus; Mr. R. Ridgway of the National Museum, Washington; Mr. W. Brewster of the Museum of Comparative Zoölogy, Cambridge, Mass.; Mr. W. Stone of the Academy of Natural Sciences, Philadelphia; Prof. J. A. Allen and Mr. F. M. Chapman of the American Museum of Natural History, New York; and Mr. Geo. B. Sennett.

LITERATURE OF THE GENUS.

In reviewing the literature of *Dendrornis*, I confine myself mainly to those authors and works by which new species have been introduced to ornithologists; or to those where certain forms are described that our present knowledge hardly permits us to accept as entirely worthy of occupying distinct positions among the

* Of the above desiderata, specimens of *ocellata*, *elegans*, and *spixi*, collected by Natterer, have been forwarded to the American Museum of Natural History from the Vienna Museum, but have not been received in time for me to remark upon them in this paper. [See p. 207 of this number of 'The Auk.'—ED.]

species of the group. As the earliest writer on the birds of this genus does not date back of 1818 I am fortunately not required to decide which is the proper edition of Linnæus's 'Systema Naturæ' for ornithologists to consider as the true and only starting point.

1818. LICHTENSTEIN, *Abhand. Königl. Akad. Wissens.*—Two species are here described as *Dendrocolaptes guttatus*, and *D. obsoletus*. Species 2.

1818. VIEILLOT, *Nouveau Dictionnaire d'Histoire Naturelle*.—*Dendrornis pardalotus* described as *Dendrocopus pardalotus*. Species 3.

1824. SPIX, *Avium species novæ quas in itinere per Brasiliam*.—*D. ocellata* described as *Dendrocolaptes ocellatus*; and *D. tenuirostris* (nec Licht.) described under the genus *Dendrocolaptes*. Species 5.

1827. SWAINSON, *Philosophical Magazine*.—*D. flavigaster* described as *Xiphorhynchus flavigaster*. . . . Species 6.

1831. LESSON, *Traité Ornithologie*.—*Dendrocolaptes tenuirostris* Spix, re-named *Picolaptes spixii*, which specific name stands, as *tenuirostris* had already been employed by Lichtenstein.

1842. LAFRESNAYE, *Revue et Magasin de Zoologie*.—*Dendrornis triangularis* described as *Nasica triangularis*. . . . Species 7.

1843. LESSON, *Echo du Monde Savant*.—*D. flavigaster* Swain. re described as *Dryocopus eburneirostris*.

1844-46. TSCHUDI, *Untersuchungen über die Fauna Peruanæ*.—*Dendrornis chunchotambo* described. . . Species 8.

1847. JARDINE, *Annals and Magazine of Natural History*.—*D. susurrans* described as *Dendrocolaptes susurrans*. . . . Species 9.

1850. LAFRESNAYE, *Revue et Magasin de Zoologie*.—*D. d'orbignyanus*, *D. multiguttata*, and *D. guttatoides* described under the genus *Nasica*. . . . Species 12.

1852. LAFRESNAYE, *Revue et Magasin de Zoologie*.—*D. susurrans* re-described as *Nasica beauperthuysii* and *N. albisquamata*.

1852. EYTON, *Jardine's Contributions to Ornithology*.—*D. multiguttata* re-described as *Picolaptes notatus*.

1853. SCLATER, *Proceedings of the Zoological Society of London*.—*D. eytoni* described as *Dendrocolaptes eytoni*.
 Species 13.

1856. LAFRESNAYE, *Castelnau Voyage de l'Amérique du Sud*.—*D. weddelli* and *D. rostripallens* described. Species 15.

1856. DES MURS, *Castelnau Voyage de l'Amérique du Sud*.—*D. kieneri* and *D. palliata* described. . . . Species 17.

1856. SCLATER, *Proceedings of the Zoological Society of London*.—*D. erythropygia* described. . . . Species 18.

1862. LAWRENCE, *Annals of the New York Lyceum of Natural History*.—*D. lacrymosa* described. . . . Species 19.

1863. LAWRENCE, *Ibis*.—*D. nana* described. . Species 20.

1867. LAWRENCE, *Annals of the New York Lyceum of Natural History*.—*D. flavigaster* Swain. re-described as *D. mentalis*.

1868. PELZELN, *Ornithologie Brasiliens*.—*D. elegans* described. Species 21.

1883. SALVIN and GODMAN, *Ibis*.—*D. polysticta* described.
 Species 22.

1883. BERLEPSCH and TACZANOWSKI, *Journal für Ornithologie*.—*D. erythropygia* Sclat. re-described as *D. erythropygia aequatorialis*.

1884. RIDGWAY, *Proceedings of the United States National Museum*.—*D. nana* Lawr. re-described as *D. lawrencei*.

1887. RIDGWAY, *Proceedings of the United States National Museum*.—*D. susurrans* Jardine re-described as *D. fraterculus*.

1888. RIDGWAY, *Proceedings of the United States National Museum*.—*D. punctigula* described. . . . Species 23.

1889. RIDGWAY, *Proceedings of the United States National Museum*.—*D. nana* Lawr. re-described as *D. lawrencei costaricensis*.

GENERA.

The birds enumerated in this paper had been assigned by different writers to various genera of the family Dendrocolaptidae until 1851, when Eyton, in 'Jardine's Contributions to Ornithology,' proposed for them the term *Dendrornis* with the following characters: "Bill nearly straight, of moderate length, the upper mandible hooked at the tip, fourth quill longest." These characters are comparative rather than positive, with the exception of the last, and yet perhaps they are the best that can be given, as

the bill, which is the main distinction, varies considerably among the different species, some being much more slender and comparatively longer than others, almost in some instances verging upon *Picolaptes*. The third and fourth quills are equal and longest (rather than fourth quill longest as given by Eyton), and in this respect resemble the species of other genera of the family. I do not think it is possible to define any characters that will serve to absolutely distinguish the members of *Dendrornis* from their relatives, and yet when the general stoutness of the bill together with the usual pattern of markings are considered together, the birds form a tolerably recognizable group. Reichenbach in his 'Handb. Spec. Ornith.,' p. 186, proposed for *D. guttata* the generic term *Premnocopus*. This however had already been employed by Cabanis for another group of birds.

GEOGRAPHICAL DISTRIBUTION.

The members of the genus *Dendrornis* are dwellers of the Neotropical Region, their most northern habitat being the Mexican Sub-region. Here, in the vicinity of Mazatlan on the west and Tampico on the east, we find the *D. flavigaster*, which extends its range into Central America as far as the confines of Costa Rica, and *D. erythropygia* ranging from Jalapa through Central America, and as far south as Ecuador. *D. lacrymosa* goes from Costa Rica through the Isthmus of Panama into Colombia. *D. punctigula* is, so far as known, restricted to Costa Rica and Colombia, not being a native of Panama, but represented there by *D. erythropygia*, a singular distribution, and not easily accounted for. *D. nana* ranges from Honduras into Colombia. Colombia (Colombian Sub-region), beside the species already given, contains *D. rostripallens*, which extends into Ecuador and is also found at Matto Grosso, Brazil, on the borders of Bolivia, possibly being a native also of that country; and *D. guttatooides*, also stated to be a native of British Guiana and Cayenne (Amazonian Sub-region), but not as yet found in Venezuela. Tobago and Trinidad contain *D. susurrans*, also met with in Venezuela and at Santarem, Brazil, in the Amazonian Sub-region. Guiana also contains *D. polysticta*, *D. pardalotus*, not found elsewhere, and, according to Sclater, also *D. multiguttata*. Brazil possesses a large number of these birds. In the Amazonian Sub-region we

have from Para, *D. spixii*, *D. palliata*, *D. obsoletus*, and *D. eytoni*; the last is also found at Santarem, where *D. multiguttata* is met with. *D. ocellata* comes from Piauhy, and *D. guttata* appears to be confined to Bahia. *D. elegans* was procured at Engenho do Gama, and is also a native of Peru; while *D. d'orbignyanus* is found at Matto Grosso in the west of Brazil and also in Bolivia. *D. triangularis* is met with in Ecuador, Peru, and Bolivia of the Colombian Sub-region, while *D. chunchotambo* is apparently confined to Peru.

KEY TO THE SPECIES.

A. Back uniform.

- a. Throat buff. Bill strong, longer than head.....1. *D. weddelli*.
- b. Throat pure white. Bill small, long as head.....2. *D. kieneri*.
- c. Throat buff, feathers margined with dark brown.....3. *D. ocellata*.

B. Back striated, under parts not dark olive, markings linear.

- a. Throat white, feathers margined with dark brown.

4. *D. susurrans*.

- b. Throat deep rusty buff, feathers margined with black.

5. *D. pardalotus*.

- c. Throat uniform buff. Under parts yellow olivaceous brown.

- a'. Back with lanceolate dark buff stripes, margined with black; breast striped with deep buff, margined with black.....6. *D. nana*.
- b'. Back with broad pale buff stripes margined with black; breast and abdomen with broad buffy-white stripes margined with black.....7. *D. multiguttata*.

- d. Throat pale or whitish-buff, feathers with dark margins.

- a'. Back with narrow buff lines.....8. *D. chunchotambo*.
- b'. Back with pear-shaped buff lines.....9. *D. elegans*

- e. Throat uniform buffy-white.

- a'. Bill: maxilla brown, mandible yellow. Under parts with narrow oblong fulvous spots.....10. *D. spixii*.
- b'. Bill entirely yellow.

- a''. Underparts with large whitish-buff spots, margined with black, spots growing smaller on abdomen

11. *D. palliata*.

- b''. Underparts rather broadly striated with pale buff, margined with black.....12. *D. flavigaster*

- c'. Bill blackish, base of mandible yellowish.

- a''. Large buff spots on back and breast; abdomen striped conspicuously with pale buff margined with blackish-brown.....13. *D. lacrymosa*.
- b''. Small buff spots on back and breast; abdomen nearly uniform brown.....14. *D. polysticta*.

f. Lower part of breast and abdomen fulvous striped with buff.

a'. Buff stripes on lower part of breast and abdomen without dark margins.

a''. Bill black; throat white; upper part of breast with large buffy-white spots, margined with black.....15. *D. eytoni*.

b''. Bill yellowish-white. Buff spots on upper and lower part of body without black margins.....16. *D. d'orbignyanus*.

c''. Bill pale horn-color; buff stripes on upper part of breast margined with black.....17. *D. rostripallens*.

b'. Buff stripes on breast and abdomen margined with black.

a''. Bill half as long again as head. Throat and stripes on breast deep rusty-buff.....18. *D. guttata*.

b''. Bill short, stout, long as head. Throat and stripes on breast whitish-buff.....19. *D. guttatooides*.

C. Back striated. Entire underparts dark olive covered with triangular yellowish-white spots.

a. Lower back bright olive. Back with few narrow buffy-white lines on upper part.....20. *D. triangularis*.

b. Lower back cinnamon-red.

a'. Back olive brown, with numerous lengthened buffy-white spots.....21. *D. erythropygia*.

b'. Back olive brown with narrow whitish-yellow stripes on upper part.....22. *D. punctigula*.

The description of *D. obsoletus* Licht, is so meagre and unsatisfactory, that it is impossible to assign to it any place in the above key.

Dendroornis weddelli.

Dendroornis weddelli LAFRES. DES MURS, Voy. Castel. Amer. Sud. Ois. p. 46, Tab. xiv, fig 2. (1856).

Habitat.—?

Crown and nape reddish-brown, with pear-shaped spots of buff, minute on forehead, more elongated on nape. Back uniform reddish-brown, the shafts of feathers buff. Rump and upper tail-coverts cinnamon-red. Throat buff, each feather margined with a narrow blackish-brown line; this becoming broader and more conspicuous on the buff markings on the lower part of the neck. Under parts olive brown, each feather with a lengthened pear-shaped pale buff spot without any dark margin, these spots becoming obsolete on the abdomen. Under tail-coverts olive brown with a reddish tinge. Wings cinnamon. Tail cinnamon-red, much darker than the wings. Bill very long, slender and pointed; horn-brown on maxilla, pale yellow on mandible. Feet pale brown. Length 8½ in. Wing 3½ in. Tail 3½ in. Bill 1½ in. Description taken from type, No. 2267, Coll. Boston Soc. Nat. Hist.

The types of this species are before me from the Lafresnaye collection, and they appear quite distinct from all others of this genus. The figure in Des Murs's work (l. c.) gives no idea of the bird, and is, like all the other figures of *Dendrornis* in the volume, apt to mislead, as they are quite unlike the specimens, both in color and in shape and distribution of the spots. *D. weddelli* is remarkable for its long and slender bill, which is quite straight with the gony's very long and ascending. The maxilla is slightly hooked at the point. Des Murs gives no habitat for the species, nor is any mentioned on the labels. Mr. Sclater states in P. Z. S., 1871, p. 86, that he had compared his specimens, designated by him heretofore as *D. palliata*, with the *marked types* of *D. weddelli* in the Paris Museum and "found them identical with it and not with *D. palliatus*." A doubt arises here in my mind whether after all specimens marked *D. weddelli* were really that species. Des Murs gives the name of *D. weddelli* as a MS. one conferred by Lafresnaye, and the author of the birds of Castelnau's 'Voyage' does not say that the type or any specimens of *weddelli* are in the Paris Museum; while Lafresnaye's collection contains two specimens marked as *the types* of the species, while they are also enumerated as such in the catalogue, made by Jules Verreaux, of the collection in Paris, before it was sold to Dr. Bryant and brought to Boston. On the other hand, *D. palliatus* Dev. and Des Murs is not contained in the Lafresnaye collection and would naturally be supposed to be among Castelnau's birds in the Paris Museum. I do not mean to argue that *D. weddelli* is not represented in the Paris Museum collection, but I doubt very much if any specimen there is rightly labelled as a type of the species. The two are apparently very distinct, the form and length of the bill of *D. weddelli* being quite different from that of the other species of *Dendrornis*, and neither agrees with the typical specimen of *D. chunchotambo* Tsch. before me, which has been considered as a synonym of *D. ocellata* Spix by some writers.

Dendrornis kieneri.

Dendrornis kieneri DES MURS, Voy. Amer. Sud. Ois. p. 45, pl. 14, fig. 1. (1856).

Habitat.—Ega, Brazil.

"D. suprà cinnamomeo-rufus; secundariis rectricibus fuscioribus; tergo dilutiore; capite, genis, colloque postico ferè nigris, fulvoalbide stricto

flammulatis; remigum primariis apice nigricantibus; rectricibus apice elongato-acuminatis. Subtus fulvo-rufus; gutture albescente; pectore albido flammato, maculis nigro circumcinctis; abdomine fulvo-albido striato. Rostro minore corneo. Pedibus brunneis."

"Dessus de la tête et derrière du cou d'un noirâtre beaucoup plus prononcé que dans le *D. rostripallens*; chaque plume striée de raies d'un fauve blanchâtre s'épanouissant en forme de larmes par le bas, où la bordure noire qui les encadre les fait ressortir avec plus d'éclat; dos d'un brun roussâtre, uniforme; ailes et queue d'un brun rouge-cannelle très foncé; les remiges primaires teintes d'un brun fuligineux ou noirâtre à leur pointe; menton d'un blanc presque pur. Tout le reste du dessous du corps d'un fauve roussâtre; la poitrine largement écaillée de plaques d'un blancé légèrement teinté de fauve, occupant presque toute la surface de chaque plume, et encadrée d'une fin liséré noir; le ventre strié de raies longitudinales d'un fauve blanchâtre. Bec couleur de corne, brunâtre à sa base. Pieds d'un brun noirâtre. Longueur totale 22 centimètres environ;—du bec, $2\frac{1}{2}$; du tarse, 2; de la queue près de 9; le rachis de chacune des rectrices dépassant les barbes de 1 centimetre."

The above is Des Murs's description. I have not seen this species.

Dendrornis ocellata.

Dendrocolaptes ocellatus SPIX, Av. Bras. Vol. I, p. 88. Text (1824).

Dendrocolaptes guttatus SPIX, Av. Bras. Vol. I, Tab. xci., fig. 1. (1824).

Picolaptes ocellatus LAFRES., Rev. Mag. Zool. 1850, p. 371.

Habitat.—Piauhy, Brazil (Spix).

"Sub-minor, olivaceo-castaneus, rostro fere recto, non adunco, parum compresso; gula ochracea; jugulo maculis ochraceis ocellato fuscoque fimbriato; capite nucha pectoreque fulvo strigilatis; macula auriculari crispa, fulvo-strigilata; collo antico ochraceo-guttato."

"Descriptio. Corpus Dendrocolapte guttato ac Pico minus; dorsum immaculatum corpusque subtus olivaceo-ferruginea; alæ subtus fulvæ; remiges candaque castaneæ, rectricibus intermediis ad apicem acutis; rostrum olivaceo-fuscum, subarcuatum; pedes fusco-albidi. Longitudo corp' 7, cauda $3\frac{1}{2}$, c. alis. 1. 2', rostri $1\frac{1}{3}$."

The above is Spix's description of the species, and judging from this and his figures (I have not seen the type), I cannot consider that it is the same as *D. chunchotambo* Tschudi from Peru. Most of the later writers on these birds, have Tschudi's name as a synonym of *ocellatus* Spix, and while some state that they have compared their specimens with Tschudi's type, none say that they have also compared them with the type of Spix's spe-

cies. As will be noticed in my Key, the two great groups into which the known species can be divided are characterized by having the back uniform in color, or striated, and so few are the former that out of the 23 species acknowledged in this paper, but three can be placed in the first division. Now, as will be noticed, Spix says of his bird, "dorsum immaculatum," and his figure shows the back without the spots or lines. Tschudi's species has the back covered with narrow buff lines. The distinction here is important, and would alone seem to be sufficient to prevent these birds from being considered as the same species. The measurements given by Spix do not at all agree with the typical specimen of Tschudi's bird before me, being much less in all of them, except the bill, which is longer. There are other differences in color of the plumage, but not sufficiently definite for me to found an opinion, not having Spix's bird before me; but those I have given, seem to me quite enough to prevent me from considering *D. chunchotambo* as a synonym of *D. ocellata*. It remains for some one who may have an opportunity of comparing both of the types together to decide their specific standing.

Dendrornis susurrans.

Dendrocolaptes susurrans JARD. Ann. Mag. Nat. Hist. 1847, p. 81, ex Tobago.

Nasica albisquama LAFRES. Rev. Mag. Zool. 1852, p. 465.

Nasica susurrans LAFRES. Rev. Mag. Zool. 1850, p. 425.

Nasica beauperthuysii LAFRES. Rev. Mag. Zool. 1850, p. 419; 1852, p. 469.

Dendrornis fraterculus RIDGW. Proc. U. S. Nat. Mus. Vol. X, 1887, p. 526, ex Brazil.

Habitat.—Tobago, Trinidad, Venezuela, Brazil, Santarem (Riker).

Bill curved at the tip, maxilla blackish brown; mandible paler; in some specimens dark brown, others yellowish. Crown, nape and cheeks dark brown, each feather with an apical, ochraceous, oval spot. Back yellowish brown, the feathers on upper portion having central, lengthened pale yellow spots, becoming gradually narrower on the middle of the back, and disappearing altogether on the lower part. Each of these yellowish spots or lines is surrounded by a narrow dark brown border. Rump, wings, and tail, reddish brown. Throat white, the feathers edged with dark brown; rest of underparts pale yellowish brown, each feather having a central oval yellowish white spot, surrounded with a border of dark

hue. These spots become gradually less and less distinct, and disappear altogether on the lower part of the breast. Feet, pale brown. Entire length, $8\frac{1}{2}$ in.; bill, $1\frac{1}{2}$ in.; wing, $4\frac{1}{4}$ in.; tail, $3\frac{1}{2}$ in. Description taken from a Tobago specimen, collected by Ober in May, in collection American Museum Natural History. Dimensions of a specimen from Venezuela collected by Coale, No. 106,047, U. S. Nat. Mus.: Length, $7\frac{1}{2}$ in.; wing: $3\frac{9}{16}$ in.; tail, $3\frac{1}{2}$ in.; bill, $1\frac{5}{8}$ in. Dimensions of type of *D. fraterculus*, wing, $3\frac{1}{2}$ in.; tail, $3\frac{7}{8}$ in.; exposed culmen, bill broken, .83.

The above description differs in some particulars from that of the type given by Jardine (l. c.) also from Tobago. He says the *mandible* is umber-brown, *maxilla* paler. This is evidently a transposition of terms, as the mandible is never darker than the maxilla, the opposite being almost always the fact. In two specimens before me, one from Venezuela collected by Coale, the other being one of the types of *N. albisquamata* Lafres., the mandible is quite as dark as the maxilla, the entire bill being, in fact, nearly black. This variance of color seems, however, to be an individual characteristic, as nearly all specimens have the bill colored as described above. Jardine also states that the *nape* is yellowish brown like the back. In all my specimens the nape and crown are of the same color, and very much darker than the back. With the above discrepancies, the description of the type agrees with the specimens before me from Tobago and elsewhere. The depth of color differs in specimens, some being generally darker than others, and the spots brighter and more clearly defined, and their borders more sharply marked. This difference of hue does not occur in specimens from one locality more than from another, and evidently has no specific value whatever. One specimen from Tobago, collected by Ober in April, a month earlier than the one described above, has the throat pale buff, more like those of Central American birds, and the spots above and below are brighter, of a deeper color, and more distinct.

I have placed among the synonyms of this species *D. fraterculus* Ridgw., from Santarem, Brazil, the type of which is before me. The measurements in a series of these birds vary very considerably, and I have before me a specimen from Venezuela (measurements given above) that varies but slightly from the type of *fraterculus*. The length of bill in the latter I am unable to ascertain as only about half of it remains, the apical portion having disappeared. Mr. Ridgway gives the "exposed culmen 1.15,"

but the bill of the type specimen as received by me has the portion remaining of the exposed culmen only .83. The chestnut color of the shafts of the rectrices does not appear to be a reliable character, as these vary in a series from black to bright chestnut, and some specimens have both hues, the shafts of the median pair being black while those of the lateral feathers are chestnut. The pale buff of the throat is matched in the Tobago specimen mentioned above, and is evidently the result of individual variation, the specimens being more richly colored than is seen in the usual typical style. The rest of the plumage is, however, no brighter in either example than can be seen in the ordinary run of individual *susurrans*.

N. beauperthuysii Lafresnaye, is stated by its describer to be the same as *D. susurrans* (vide Rev. Mag. Zool. 1852, p. 469).

Dendroornis pardalotus.

Le Grimpard Flambé LEVAILL. Hist. Nat. des Promer. et des Guép. pl. 30, ex Guiana.

Dendrocopos pardalotus VIEILL. Nouv. Dict. Hist. Nat. Vol. 26, p. 117 (1818).

Dendroornis pardalotus PELZ. Ornith. Bras. p. 45 (1868).—SALV. Ibis, 1885, p. 422.

Habitat.—Guiana. Bartica Grove, Camacusa, Merumé Mountains, Roraima (3,500 feet) (Whiteley). Demarara (Ridgway).

Crown of head and nape blackish brown, each feather with a minute dark buff spot, these becoming slightly larger on the nape. Back dark yellowish brown, each feather having a pear-shaped, apical spot, surrounded by a narrow line of brownish black. Secondaries, rump and tail bright chestnut. Shoulders of wings yellowish brown. Primaries chestnut, with a considerable length of the apical portion of the inner webs, purplish brown. Throat deep rusty buff, the feathers edged with black. Underparts dark yellowish brown, with rather broad, deep buff lines in the centre of each feather, less distinct on flanks and abdomen. Tips of feathers of under tail-coverts chestnut. Bill: maxilla blackish brown, mandible yellowish, varying in degree among individuals. Feet, black. Length, $8\frac{1}{2}$ in.; bill, $1\frac{1}{2}$ in.; wing, 4 in.; tail, $3\frac{1}{2}$ in.

Specimen described from Demarara, Brit. Guiana, in U. S., Nat. Mus., No. 84,105.

The general hue of this species beneath is rufous, occasioned by the deep buff of its throat, and stripes and spots on head, back, and lower parts. It is apparently confined to Guiana and is readily distinguished from its allies, *D. susurrans* and *D. nana*.

Dendrornis nana.

Dendrornis nana LAW. Ibis, 1863, p. 181, ex Panama.—SALV. Proc. Zoöl. Soc. 1870, p. 193.

Dendrornis lawrencei RIDGW. Proc. U. S. Nat. Mus. Vol. X, p. 509 (1887), ex Panama.—SCLAT. Ibis, 1889, p. 353.

Dendrornis lawrencei costaricensis RIDGW. Proc. U. S. Nat. Mus. Vol. X, p. 510 (1887).—SCLAT. Ibis, 1889, p. 353.

Habitat.—Honduras, Nicaragua, Costa Rica, Panama, Colombia.

Head and nape blackish brown, each feather with an apical pear-shaped ochraceous spot, smallest on the forehead, becoming more elongated on the nape. Back brownish olive, the upper part with narrow, lanceolate dark buff stripes bordered with black; lower part of back, rump, tail and wings cinnamon-red, the wings of a rather lighter color than the tail. Throat pale buff, unspotted; cheeks pale buff, feathers edged with dark brown; underparts pale yellow-olivaceous-brown, marked conspicuously on the breast and lower part of neck with rather broad, deep buff stripes, edged with black; these stripes becoming narrower on lower breast, and nearly obsolete on flanks and abdomen. Under tail-coverts washed with rufous, more strongly defined in some specimens than in others. Maxilla dark brown, mandible yellowish, brownish at the tip. Feet blackish brown. Length, $8\frac{3}{4}$ in.; wing, $4\frac{1}{2}$ in.; tail, $4\frac{5}{8}$ in.; bill, $1\frac{3}{2}$ in.

Specimen described from Lawrence collection, No. 43,274, Am. Mus. Cat., from Panama, obtained by McLellan in 1862.

The type of this species is before me, but being in moult with the tail and wings not fully developed, I have taken another example obtained in Panama at the same time, as the type of my description. A number of specimens are before me, seventeen in all, from all the localities of which it is stated to be an inhabitant, among which are the types of *D. lawrencei* Ridgway and *D. l. costaricensis* Ridgw. From an investigation of the labels, I find the various specimens of *D. nana* have been referred to *pardalotus* Vieill. and *susurrans* Jard., sometimes to both of these species, and sometimes left undetermined. The throat entirely unspotted, easily distinguishes this species from all its near allies, and on comparison with a series of these, the different coloring of the underparts with the shape and arrangement of the spots make it readily recognizable.

I regret to place as synonyms Mr. Ridgway's species and sub-species from Panama and Costa Rica, as I can find no characters to separate them from typical *nana*. Mr. Ridgway in his descrip-

tion of *D. lawrencei* (l.c.) compares it with *D. ocellata* Spix, or, speaking more correctly, with a type specimen of *D. chunchotambo* Tschudi, which has been determined by both Sclater and Taczanowski to be identical with *D. ocellata* Spix.* It is quite true that Mr. Ridgway's specimens are separable from the species from Peru, but that is not their nearest ally, and if the type of *nana* had been in his possession at the time he wrote his descriptions I believe he would have perceived that his birds were identically the same. The slight difference in size mentioned as distinguishing *D. lawrencei* from *D. l. costaricensis* is also to be noticed in a series of any species of this genus, and is evidently of no specific value.

Dendrornis multiguttata.

Nasica multiguttatus LAFRES. Rev. and Mag. Zool. 1850, p. 417.

Picolaptes notatus EYTON, Contr. Orn. p. 26 (1852).

Dendrornis multiguttatus LAFR. DES MURS. Cast. Voy. Amer. Sud. Ois. p. 44, Tab. xii, fig. 1 (1856).

Dendrornis multiguttata SCLAT. Cat. Am. B. p. 164, sp. 1010 (1862). SCLAT. & SALV. Proc. Zoöl. Soc. 1873, p. 271.—TACZ. Ornith. Per. Tom. II, p. 180 (1884).

Habitat.—Brazil, Fontiboa, Upper Amazon (Lafres.), Santarem (Williams). Lower Ucayali (Bartlett). Cayenne (Sclater).

Top of head, neck and back olive brown, darkest on the head, which has the central portion of the feathers striped with buffy white, becoming broader and more lengthened on the back, and of a reddish shade, and all margined with black. Rump, upper tail-coverts, wings and tail cinnamon-red. Throat buff, in one specimen the feathers indistinctly margined with brown. Entire underparts grayish olive, broadly striped with buffy-white, margined with black, the stripes becoming narrower and less distinct as they proceed towards the vent. Bill yellowish white. Feet pale brown. Total length, $7\frac{1}{8}$ in.; wing, $3\frac{3}{4}$ in.; tail, $3\frac{5}{8}$ in.; bill, 1 in.

Type specimen described, No. 2269, Coll. Bost. Soc. Nat. Hist.

Several specimens are before me, among which is Lafresnaye's type. It is one of the smallest species of the genus and cannot be confounded with any other of those that I have seen. Sclater (l.c.) gives it as from Cayenne, but all the specimens I have met with are from Brazil. Of three specimens obtained at Santarem on the Amazon, one agrees in all respects with the types and was procured on July 30. The other two were shot in June,

* See my remarks on *D. ocellata*.

and instead of being grayish olive beneath, are of a decided reddish shade, and are also reddish brown on the back. In size, shape and distribution of markings, and in general dimensions, however, they agree with the July specimen, and probably merely represent a reddish phase of plumage, which I have noticed occurs sometimes with other species of the genus.

I place *Picolaptes notatus* Eyton (l.c.) as a synonym of this species, as Sclater says (P. Z. S., 1873, p. 272) he has compared the type with *D. multiguttata* Lafres. and decided it to be the same.

Dendrornis chunchotambo.

Dendrocolaptes chunchotambo TSCHUD. Faun. Peruv. p. 241, Tab. xxii, fig. 1 (1844-46). LAFRES. Rev. Mag. Zool. 1850, p. 281.—SCLAT. Proc. Zoöl. Soc. 1871, p. 86.

Dendrornis peruviana LAFRES. MS.

Nasica chunchotambo LAFRES. Rev. Mag. Zool. 1850, p. 421.

Dendrornis ocellata PELZ. Ornith. Bras. p. 45 (1868).—TACZ. Ornith Per. Tom. II, p. 179 (1884).—SCLAT. & SALV. Proc. Zoöl. Soc. 1867, pp. 575, 751, 1873, p. 271.

Dendrornis palliata SCLAT. Cat. Am. B. p. 164 (1868).—SCLAT. & SALV. Proc. Zoöl. Soc. 1873, p. 271.

Dendrornis weddelli SCLAT. Proc. Zoöl. Soc. 1871, p. 86. (nec LAFRES).

Habitat.—Peru (Tschudi) Xeberos. Eastern Peru (Bartlett).

Crown of head and nape brownish black, with small, apical, pear-shaped buff spots on each feather, slightly larger on the nape than on the forehead. Back yellowish brown, each feather having a narrow, central buff line. Cheeks dark brown, striated with narrow yellowish white lines. Chin whitish, uniform. Throat pale buff, each feather bordered with blackish brown. Under parts yellowish brown but lighter than the back. Upper part of breast covered with elongated buff spots, broadest at their apical portion, and bordered with blackish brown. The spots on lower breast, abdomen and flanks are also buff, but narrower and much longer, and become almost obsolete on the vent and lower tail-coverts. Wings, rump and tail, chestnut; apical portion of inner webs of primaries purplish brown. Bill yellowish brown. Feet blackish brown. Length, $7\frac{5}{8}$ in.; wing, 4 in.; tail, $3\frac{9}{10}$ in.; bill, $1\frac{1}{10}$ in.

Described from a specimen obtained by Tschudi in Peru (now in U. S. Nat. Mus., No. 41,918), and identified by Sclater in his own handwriting as the same as *D. ocellata* Spix.

There are three specimens in Lafresnaye's collection, bearing the MS. name of *D. peruviana*, but without any locality given

on the labels. I consider them to be the same as Tschudi's specimen from Peru; the only difference I can see between them is that the throat of Tschudi's bird is somewhat paler. As the various species of this genus exhibit examples that vary from the typical style both in coloration of plumage, and in general measurements, it does not appear to me wise to consider these specimens of Lafresnaye, on account of the slight difference shown, as specifically distinct from the species described by Tschudi.

I have included among the synonyms, *D. weddelli*, mentioned by Sclater (l.c.), as I gather from his remarks that he considers it the same as *D. ocellata* Spix. Judging from the type of *D. weddelli*, and the typical example of *D. chunchotambo* Tsch. referred to by Sclater as belonging to the Smithsonian Institution, both of which are before me; the two represent entirely distinct species.

Dendrornis elegans.

Dendrornis elegans PELZ. Orn. Bras. pp. 45, 63 (1868).—TACZ. Ornith. Peru, Tom. II, p. 178 (1884).

Habitat.—Engenho do Gama, Manaqueri, Brazil (Natterer). Peru, Chamicuros (Bartlett), Yurimaguas (Stolzmann).

"D. pileo nuchaque nigrescentibus, maculis guttaeformibus parvisochraceis, dorso fusco olivaceo maculis ochraceis conformibus sed multo majoribus postice nigro limbatis, uropygio caudaque cinnamomeo rufis, tectricibus alarum minoribus, mediis et majorum pogonio externo, marginibusque primiarum fusco olivaceis, plumis humeralibus, remigibus primariis excepto apice nigricante, reliquis totis cinnamomeo rufis, plumis auricularibus nigrescentibus ochraceo striatis, gula flavo albida, plumarum marginibus obscuris plus minusve conspicuis, juguli et pectoris plumis basi griseo olivaceis, scapo et macula terminali triangulari obscure marginata ochraceis, his maculis in jugulo contiguis et squamæformibus, in pectore rarioribus haud contiguis, abdomine fere unicolore ochraceo olivaceo maculis vix conspicuis, rostro compresso subrecto, culmine parum deflexo, gonyde fere recta, maxilla et apice mandibulae obscure cornicis, mandibula reliqua cœruleo-cinerea. Longit. (specim. exsiccat.) 8-8½", alæ 3" 7-11", caudæ 3"-3" 5", rostri 11"-1", a rictu 16-17.""

The above is Pelzeln's description of the type. I have not seen any specimen of this species.

Dendrornis spixii.

Dendrocolaptes tenuirostris SPIX. Av. Bras. p. 88, Tab. 91, fig. 2 (1824) (nec LICHT.).

Picolaptes spixii LESS. Trait. Ornith. p. 314 (1831).

Dendrornis spixii PELZ. Orn. Bras. p. 45 (1868).

Habitat.—Para. Brazil (Pelzeln).

“Minor, castaneus; rostro cylindrico, arcuato; gula brevipenni immaculate fulva; capite fulvo-ocellato; occipite albido-maculato; nucha, collo, pectore abdomineque oblonge et latissime fulvo-maculatis; macula auriculari periophthalmiisque fulvis, nigro-variegatis; canda lœte rufa.”

“Descriptio. Corpus præcedente (*D. ocellatus*) nonnihil minus; caput fuscum, ocellatum; dorsum cōrpus subtilis olivaceo-rufescens. albo large strigilata; tectrices alarum olivaceo-castanea; remiges castaneæ, vexillo interno nigricante; rostrum supra fuscum, subtilis flavidum; pedes cœrulentes. Longitudo corporis $6\frac{1}{4}$ ', cauda 2 1-2', c. alis 1. $1\frac{1}{2}$ ', rostri 1'.”

The above are Spix's descriptions from the type. I have not seen any specimens of this species.

Dendrornis palliata.

Dendrornis palliatus DES MURS, Voy. Amer. Sud. Ois. p. 46, pl. 15 fig. 1 (1856).

Dendrornis palliata SCLAT. & SALV. Proc. Zoöl. Soc. 1866, p. 184.

Habitat.—Lower Ucayali (Bartlett).

“D. suprà cinnamomeo brunneis; subtus brunneo-olivaceus; capite brunneo-nigrescente, fulvo-albido flammato; collo postico tergoque concoloribus, singulis flammulis nigro circumdati; uropygio, alis caudâque cinnamomeo rubris; primariis apice nigrescentibus; mento gulâque fulvo-albidis; pectore abdomineque fulvo-albido squammatis, singulis maculis nigro-lateraliter marginatis. Rostro corneo. Pedibus brunneis.”

“Dessus du corps d'un brun olivâtre; tête d'un brun noirâtre piqueté de flammèches de fauve blanchâtre; chaque flammèche encadrée de noir. Croupion, ailes et queue, d'un brun rouge cannelle foncé; les primaires terminées de brun noirâtre; menton et gorge d'un blanc teinté de fauve; l'estomac largement maculé de blanc fauve; chaque plume de cette couleur encadrée de noir. Ventre flamméché de taches de même teinte beaucoup moins apparentes. Bec couleur de corne jaunâtre. Pieds brun. Longueur totale 19 centimètres—du bec, $2\frac{1}{2}$;—du tarse, 2;—de la queue, $7\frac{1}{2}$.”

The above is Des Murs's description of the type. I do not know the species.

Dendrornis flavigaster.

Xiphorhynchus flavigaster SWAIN. Phil. Mag. Vol. I, p. 440 (1827).

Dryocopus eburneirostris LESS. Echo. Mond. Sav. (1843).—DES MURS, Icon. Ornith. pl. 52 (1849).

Dryocopus flavigaster DES MURS, Icon. Ornith. Text. (1849).

Dendroornis eburneirostris SCLAT. Cat. Am. B. p. 164, sp. 1011 (1862).—
Bouc. Proc. Zoöl. Soc. 1883, p. 450.

Nasica flavigaster LAFR. Rev. Mag. Zool. 1850, p. 283.

Dendroornis mentalis LAWR. Ann. Lyc. N. Y. Vol. VIII, 1867, p. 481.

Habitat.—Mexico, Yucatan, Guatemala, Honduras, Nicaragua, Costa Rica.

Top of head and nape black; the centre of each feather with a pale buff stripe, widest at the tip, very small on the forehead, where it is merely an apical spot, larger and broader on the nape. Back light rufous, with broad pale buff or buffy white stripes margined with black. Rump and upper tail-coverts cinnamon, darkest on tail-coverts. Wings cinnamon, tail cinnamon-red, considerably darker than the wings. Throat buffy white without spots in adults; in some specimens the feathers of lower part of throat are edged with dark brown. Underparts grayish olive with conspicuous broad, pale buff stripes margined with black, largest and most numerous on upper part of breast, becoming narrower on flanks and lower part of breast and indistinct on abdomen and vent. On either side of throat is a more or less distinct black line sometimes extending from base of mandible to lower part of the throat, in other examples again only seen on a portion of the lateral part of the throat. Bill white, dark brown in some specimens on the basal portion. Feet brownish black.

Description taken from an example from Orizaba, No. 31,737. Museum Comparative Zoölogy, Cambridge, Mass. Total length, $10\frac{1}{2}$ in.; wing, $4\frac{5}{8}$ in.; tail, $4\frac{3}{4}$ in.; bill, $1\frac{5}{8}$ in.

Other specimens vary as follows: Wing, $4\frac{1}{2}$ —4 in.; tail, $4\frac{5}{8}$ — $3\frac{7}{8}$ in.; bill, $1\frac{1}{2}$ — $1\frac{1}{8}$ in.

Sixty specimens of this species are before me from nearly all the localities in which it is stated to dwell, among them being the types of Lafresnaye's *D. albirostris*, a MS. name, and Lawrence's *D. mentalis* from Mazatlan. The latter is a light colored specimen, that is possibly seasonal, as other specimens from Mazatlan* are as dark colored as those from various other localities, and it is impossible to separate them from specimens obtained at Orizaba, and Tampico in Mexico, and other places in Guatemala, Honduras, etc. The stripes on the back vary in width in different specimens, even from the same locality, and this has no specific value, and I can perceive nothing in the large series at my command to indicate that there is more than one species of this form.

* Specimen 58,237, National Museum, from Mazatlan. Back olivaceous brown. Stripes rusty buff.

In order to exhibit more clearly the variation that exists in the extreme length of the wing, I give here a list of forty-four specimens from various localities, with the measurements of the wing taken from the carpal joint to extreme point of primaries. It will be seen that the longest wing measures $4\frac{3}{4}$ inches and the shortest $3\frac{7}{8}$, a difference of $\frac{7}{8}$ of an inch. The specimens with the longest wings come from Tehuantepec, and those with the smallest from Mazatlan and Guatemala. But there are examples from Tehuantepec with a wing measurement of $4\frac{3}{8}$ inches, showing a difference from its larger relative of $\frac{3}{8}$ inch, and from Mazatlan there are specimens with wings $4\frac{1}{2}$ inches in length, or a difference in birds from that locality of $\frac{5}{8}$ inch. In Mazatlan and Tehuantepec these extremes are exhibited in different sexes, the female being the smaller, but examples from Orizaba show the male to have a wing of $4\frac{1}{4}$ inches and the female of $4\frac{5}{8}$ inches. Honduras also shows a male with a wing $4\frac{3}{8}$ inches long, and a female with one $4\frac{1}{2}$ inches, so it cannot be said that the difference of measurement is sexual; nor is it of any value, as already stated, for a specific character.

			Wing.
♀ 663,	Sennett Coll.	Tampico.	$4\frac{1}{2}$ in.
♀ 583,	" "	"	$4\frac{3}{4}$ in.
♀ 584,	" "	"	$4\frac{5}{8}$ in.
♀ 568,	" "	"	$4\frac{1}{2}$ in.
— 28559,	National Museum.	Mazatlan.	$4\frac{3}{8}$ in.
♀ 50788,	" "	"	$3\frac{7}{8}$ in.
♂ 50787,	" "	"	$4\frac{1}{2}$ in.
♂ 3450,	" "	"	$4\frac{1}{2}$ in.
— 58238,	" "	"	$4\frac{1}{4}$ in.
— 51479,	" "	"	$4\frac{1}{2}$ in.
— 58237,	" "	"	$4\frac{5}{8}$ in.
♂ 30134,	" "	"	4 in.
♂ 43272,	Amer. Mus. Nat. Hist., N. Y.	"	$4\frac{5}{8}$ in.
— 43258,	" " " " "	Jalapa.	$4\frac{3}{8}$ in.
♂ ——,	Sennett Coll.	Vera Cruz.	$4\frac{5}{8}$ in.
— 38187,	National Museum.	Orizaba.	$4\frac{1}{2}$ in.
♂ 31738,	Mus. Comp. Zoöl. Cambridge.	"	$4\frac{1}{4}$ in.
♀ 31737,	" " " " "	"	$4\frac{5}{8}$ in.
♂ 41626,	National Museum.	Cordova.	$4\frac{3}{8}$ in.
♂ ——,	Sennett Coll.	Manzanillo.	$4\frac{1}{8}$ in.
— 57608,	National Museum.	Tehuantepec.	$4\frac{3}{4}$ in.
♂ 58901,	" "	"	$4\frac{3}{4}$ in.
♂ 57615,	" "	"	$4\frac{5}{8}$ in.

♂ 57614,	National Museum	Tehuantepec.	4 $\frac{3}{4}$ in.
♀ 57613,	" "	"	4 $\frac{5}{8}$ in.
♀ 59598,	" "	"	4 $\frac{3}{8}$ in.
♀ 51609,	" "	"	4 $\frac{3}{8}$ in.
— 106293,	" "	Yucatan.	4 $\frac{5}{8}$ in.
♂ 106292,	" "	Temax.	4 $\frac{5}{8}$ in.
♂ 39241,	" "	Merida.	4 in
— 50533,	" "	Guatemala.	4 $\frac{3}{8}$ in.
— 603278,	" "	"	4 $\frac{1}{4}$ in.
— 30765,	" "	"	4 $\frac{5}{8}$ in.
— 42700,	" "	"	4 $\frac{5}{8}$ in.
— 30766,	" "	"	4 in.
— 28028,	Amer. Mus. Nat. Hist., N. Y.	"	3 $\frac{7}{8}$ in.
— 43260,	" " " " "	"	4 $\frac{1}{4}$ in.
— 43257,	" " " " "	"	3 $\frac{7}{8}$ in.
— 43259,	" " " " "	"	4 $\frac{3}{8}$ in.
— 28127,	" " " " "	"	3 $\frac{7}{8}$ in.
— 28128,	" " " " "	"	4 in.
♂ 112554,	National Museum.	Truxillo, Honduras.	4 $\frac{3}{8}$ in.
♂ 112583,	" "	" "	4 $\frac{3}{8}$ in.
♀ 90921,	" "	Sucuya, Nicaragua.	4 $\frac{1}{2}$ in.
♂ 90922,	" "	" "	4 $\frac{1}{4}$ in.

Dendrocnis lacrymosa.

Dendrocnis lacrymosa LAWRIE. Ann. Lyc. Nat. Hist. Vol. VII, p. 467 (1862).—SALV. Proc. Zoöl. Soc. 1870, p. 193.—SCLAT. & SALV. Proc. Zoöl. Soc. 1879, p. 523.

Habitat.—Costa Rica, Panama, Colombia (Truando, Schott). Antioquia (Salmon).

Top of head, back, small and middle wing-coverts black, centre of each feather covered by a pale fulvous spot, pear-shaped and quite small on the head, increasing in size from the forehead, and becoming quite large and broadly elongated on the back. Larger wing-coverts bright rufous, with a broad black stripe on the edge of the outer web. Lower part of back, rump, and upper tail-coverts, wings and tail, dark cinnamon-red. Throat, buffy white. Sides of head pale buff streaked with blackish brown. Neck in front, and breast pale buff, each feather margined with black. Flanks, abdomen and lower tail-coverts dark grayish-brown striped with pale buff, margined with blackish brown. Maxilla blackish brown, base of mandible pale yellow. Feet dark brown. Total length, 9 $\frac{1}{2}$ in.; wing, 4 $\frac{3}{4}$ in.; tail, 4 $\frac{5}{8}$ in.; bill, 1 $\frac{3}{8}$ in. Ex Type, Coll. Am. Mus. Nat. Hist., N. Y.

In some specimens the throat is deep buff with a tinge of rufous on the abdomen and lower tail-coverts. Apparently younger birds have the underparts white tinged with buff, the feathers margined with dark brown.

Dendrornis polysticta.

Dendrornis polysticta SALV. & GOD. Ibis, 1883, p. 210.—SALV. Ibis, 1885, p. 422.—REICH. & SCHOL. Jour. für Ornith. 1885, p. 91.

Habitat.—Bartica Grove, British Guiana (Whiteley).

“Supra brunnea, capite summo nigricante, uropygio, alis et cauda ferrugineis; capite summo, cervice et interscapulio cervino guttatis, guttis singulis nigro marginatis; subtus gutture cervino, pectore et abdomine toto brunnescensibus, illo guttis cervinis nigro marginatis notato; rostri maxilla nigricante, mandibula interdum nigricante interdum ad basin flaviante, pedibus corylinis; long tota 8.5, alæ 4.0, rostrum rictu 1.5, tarsi 0.9.”

“Obs. D. lacrymosæ affinis, sed guttis supra et subtus minoribus, abdome imo fere immaculato et tectricibus alarum brunneis diversa.”

The above are Salvin and Godman's description and observations. I have not seen the species.

Dendrornis eytoni.

Dendrocolaptes eytoni SCLAT. Proc. Zoöl. Soc. 1853, p. 69.

Dendrornis eytoni SCLAT. Cat. Am. B. p. 165, sp. 1013 (1862).—SCLAT. & SALV. Proc. Zoöl. Soc. 1867, p. 575.

Dendrornis eytonii PELZ. Ornith. Bras. p. 45 (1868).

Habitat.—Brazil, Capin River, Lower Amazon, Para (Wallace), Santarem (Riker).

Head and nape black with central pale buff spots. Lower part of neck and back dark olive brown, centre of feathers with broad buff stripes margined with black, the stripes becoming narrower towards the middle of the back. Lower part of back, wings, rump, upper tail-coverts and tail cinnamon, the tail darker than the wings, and ends of primaries dark brown. Throat white, upper part of breast and sides dark brown with broad, large, buffy white spots margined with black. Abdomen and under tail-coverts fulvous, obscurely striped with pale buff. Bill black. Feet black. Total length, 9 $\frac{1}{2}$ in.; wing, 4 $\frac{1}{2}$ in.; tail, 4 $\frac{1}{2}$ in.; bill, 1 $\frac{1}{2}$ in. Description from an example from Santarem, Brazil, Coll. C. B. Riker.

Dendrornis d'orbignyanus.

Nasica d'orbignyanus PUCH. & LAFRES. Rev. Mag. Zool. 1850, p. 420, ex Peru.

Habitat.—Bolivia, Guarayos, Chiquitos, a Dom. d'orbigny alatus (Puch. & Lafres.). Peru? (Lafres.). Brazil, Matto Grosso (Smith).

Crown black, centre of feathers with lengthened pear-shaped pale buff spots. Back of neck and upper part of back olivaceous brown with a reddish tinge, and with a central buff stripe on each feather. Lower part of back and upper tail-coverts cinnamon-red. Wings and tail cinnamon-red, the tail being a darker shade. Throat pale buff. Underparts olivaceous brown with a reddish tinge, and striped with pale buff; these stripes broadest on upper part of breast, growing narrower as they descend and becoming nearly (in some specimens, quite) obsolete on the abdomen. Bill yellowish white. Feet black. Total length, about $9\frac{3}{4}$ in.; wing, 5 in.; tail, $4\frac{1}{4}$ in.; bill, $1\frac{1}{2}$ in.

Description taken from a specimen in the collection of the Academy of Natural Sciences of Philadelphia from Chiquitos, the locality of Lafresnaye's type.

This species is apparently distinct from the other members of *Dendroornis* from the fact, that the buff stripes on neck, upper part of back, and underparts are not margined with black. No other species is known so far as I am aware, that has not these spots or stripes margined with black, upon some one or other portion of the back or underparts. This character is especially emphasized by its describer, who states that “*ses flammettes ne sont nullement circonscrites de noir ou de noirâtre sur les parties antérieures et sur le dos.*”—Five specimens are before me, which I assign to this species, three of them are from the collection of the Philadelphia Academy of Sciences, and two from Matto Grosso in the collection of the American Museum of Natural History in New York. One of these last, No. 33,650, has on two of the feathers of the neck, a narrow black margin to the central buff stripe, but the other, No. 33,649, is entirely without black margins. The underparts on all the examples are more olivaceous than those of specimens of either *D. rostripallens* or *D. guttata*, which have a very decided reddish tinge. In a large series of specimens it would not be unlikely, I think, to find some with more or less black margins to the buff stripes on the *back*, but the fact that these stripes on the entire underparts are without these black margins readily distinguishes *d'orbignyanus* from *rostripallens*, which has the breast stripes margined with black, and from *guttata*, which has all the stripes on the underparts margined in the same manner.

The authors of this species, after their description, give its habitat as "Guarayos, Chiquitos," and at the end of the remarks, it is said "Le d'orbignyanus est du Pérou." As Chiquitos lies to the east of the Andes in Bolivia, it is evident that there is some confusion here. I have seen no Peruvian specimens.

Dendrornis rostripallens.

Dendrornis rostripallens LAFRES. MS. DES MURS, Voy. Castel. Amer. Sud Ois. p. 45, pl. 12, fig. 2 (1856), ex Upper Amazon.—PELZ. Ornith. Bras. p. 45 (1868);—*ibid.*, Proc. Zoöl. Soc. 1882, p. 27.—TACZ. Ornith. Per. Tom. II, p. 176 (1884).

Dendrornis pardalotus SCLAT. Cat. Am. B. p. 164, No. 1007 (1862), nec. VIEILL.

Dendrornis guttata TACZ. Proc. Zoöl. Soc. 1874, p. 529 (nec LICHT.).—SCLAT. & SALV. Proc. Zoöl. Soc. 1879, p. 622 (nec. LICHT.).

Habitat.—Colombia, Ecuador, Sarayacu (Buckley). Brazil, Matto Grosso (Smith).

Crown and nape blackish brown, spotted with buffy white, the spots on the crown pear-shaped, on the nape elongated. Back yellowish brown, central portion of feathers pale buff, this color disappearing on centre of back. Rump and upper tail-coverts cinnamon-red. Chin white, throat deep buff, unspotted. Lower parts pale yellowish brown, inclined to reddish buff on the abdomen, conspicuously striped with deep buff, the stripes, on upper part of breast only, margined with black. These buff stripes usually become obsolete on lower abdomen and vent, although in some specimens they are faintly visible. Wings cinnamon. Tail very dark chestnut. Bill, pale horn-color; in some examples, however, the lateral basal portion of the maxilla is blackish brown. Feet black. Length, $10\frac{1}{2}$ in. to 9 in.; wing, $4\frac{1}{2}$ to $4\frac{1}{2}$ in.; tail, $4\frac{1}{2}$ to 4 in.; bill, $1\frac{7}{8}$ to $1\frac{3}{4}$ in.

The above measurements are taken from a series of nine specimens and show the extremes.

In his description of the type of this species, Lafresnaye makes no mention of any black margins to the buff stripes upon the breast, and if the type does not possess these it is questionable if the birds generally assigned to *rostripallens* do not really represent some other form, as all writers describe them as having these stripes margined with black. The figure given by Des Murs does not satisfactorily indicate whether these black margins exist or not. However, I am led to believe that this was an oversight on the part of the describer of the species, since all the examples of

'*rostripallens*' from Lafresnaye's collection have the buff stripes on the upper part of the breast margined with black. An examination of the type, which is probably in the Paris Museum, is necessary to decide this point. I include among the synonyms, *D. pardalotus* given by Sclater in his 'Catalogue of American Birds', as one of the specimens contained in the Lawrence Collection is labelled in Sclater's handwriting, "*Dendrornis pardalotus*, Vieill. of my Cat. P. L. S."

The bills of the various specimens before me vary considerably, not only in color, as already noticed, but also in size, and this occurs in examples from the same locality.

Dendrornis guttata.

Dendrocolaptes guttatus LICHT. Abhandl. Königl. Akad. Wissens. Berl. 1818, p. 201; *ibid.* Verz. Doubl. Zool. Mus. Berl. p. 16, no. 149 (1823).

Dendrornis guttata PELZ. Ornith. Bras. p. 45 (1868).

Habitat.—Brazil, Bahia.

Upper part of head blackish brown, each feather with a small, pear-shaped dark buff spot tipped with black. Back olive brown with reddish tinge, with elongated dark buff stripes bordered with black, these stripes becoming narrower towards the lower part of the back. Lower part of back and upper tail-coverts cinnamon-red. Throat deep rusty buff. Underparts rusty buff, conspicuously striped with reddish buff, all the stripes margined with black. On the abdomen these stripes have a reddish tinge. Wings dark cinnamon; exposed portions of primary coverts olivaceous. Tail dark chestnut. Under tail-coverts in some specimens have a rufous tinge. Bill has the maxilla dark brown, paler on the culmen; mandible yellowish. Feet brownish black. Length, 9 $\frac{3}{4}$ in.; wing, 4 $\frac{3}{4}$ in.; tail, 4 $\frac{1}{2}$ in.; bill, 1 $\frac{1}{8}$ in. Specimen described, No. 43,270, Am. Mus. Nat. Hist., Lawr. Coll.

This species is very nearly allied to *D. rostripallens* Lafr., and a question arises in my mind if they should really be regarded as distinct. The chief difference seems to be that the buff stripes on the underpart of the body in *guttata* are margined with black even upon the abdomen, while such margins in *rostripallens* are restricted to the upper part of the breast. It appears to be a rather fine distinction, and can only be ascertained to be reliable from the examination of a large series of specimens. Unfortunately I have not been able to procure many examples from

Bahia, the locality from which the type came, but I doubt, with ample material to enable an opinion to be formed, whether the two forms could be kept apart. Of course if they should be proved to be but one species, *rostripallens* with its synonymy would have to be included under the much older name of *guttata*.

Dendrornis guttatoides.

Nasica guttatoides LAFRES. Rev. Mag. Zool. 1850, p. 387, ex Colombia. *Dendrornis guttatoides* DES MURS. Voy. Castel. Ois. p. 43, pl. xiii, fig. 2 (1856).—SCLAT. Cat. Am. B. p. 164, sp. 1008 (1862).—SALV. Ibis, 1885, p. 422.

Habitat. Colombia (Lafres.), Cayenne (Sclater), Bartica Grove, British Guiana (Whiteley).

Top of head and back of neck, black, with central pale buff spot on each feather, more elongated on the neck. Back reddish brown with rather broad central deep buff stripes, bordered with black; these stripes becoming narrower on lower part of the back. Rump and upper tail-coverts dark cinnamon-red. Cheeks pale buff streaked with dark brown. Throat whitish buff, uniform. Underparts dark olive brown, reddish on the centre of abdomen, vent and under tail-coverts, each feather with a broad central streak bordered with black, these streaks whitish buff on the breast, becoming brighter and reddish on the abdomen, and indistinct, towards the vent. Wings and tail dark cinnamon. Bill short, dark brown, paler on basal half of mandible. Feet, horn brown. Total length $9\frac{1}{2}$ in.; wing, $4\frac{1}{2}$ in.; tail, $4\frac{3}{8}$ in.; bill, $1\frac{1}{2}$ in. Type described, No. 2258, Coll. Bost. Soc. Nat. Hist.

The above description is taken from Lafresnaye's type, which he states in the 'Revue et Magasin' (l. c.), as having been bought from a dealer with some other birds from Colombia. It was also obtained by Castelnau at Lorette. The type represents a very strongly marked and well defined species, not in any way resembling the *D. guttata* with which its describer compared it. The entire underparts are conspicuously covered with broad buff stripes, and the bill, which perhaps is the strongest character, is very short and stout for the size of the bird. Oudart's figure in Des Murs's work gives no idea whatever of its appearance. The type is a fine specimen, and in perfect preservation.

Dendrornis triangularis.

Nasica triangularis LAFRES. Rev. Zool. 1842, p. 134; *ibid.*, Mag. Zool. Ois. pl. 32 (1843); *ibid.*, Rev. et Mag. Zool. 1850, p. 418.

Dendrornis triangularis SCLAT. Cat. Am. B. p. 165, sp. 1014, (1862).—SCLAT. & SALV. Proc. Zoöl. Soc. 1879, p. 622.—TACZ. Ornith. Pér. Tom. II, p. 177 (1884).

Habitat. Colombia, Ecuador, Peru, Ray-Urmana (Stolzmann), Bolivia, Simacu, Prov. Yungas (Buckley).

Top of head and nape blackish, each feather with a lengthened central buffy white spot. Back bright olive, with a few narrow buffy white lines on the upper part. Upper tail-coverts cinnamon. Throat yellowish white, varying in depth of shade, each feather with an apical blackish brown margin. Entire underparts dark olive thickly covered with yellowish white triangular spots placed at the end of each feather. In some specimens these spots are rounded at the end instead of being of a triangular shape. Wings pale cinnamon, with the edges of the outer webs of all the feathers bright olive. Tail dark cinnamon brown. Bill blackish at the base, yellowish white for the remaining part. Feet, olive brown. Total length, $8\frac{1}{2}$ inches.; wing, $4\frac{1}{2}$ in.; tail, $4\frac{1}{8}$ in.; bill, $1\frac{1}{8}$ in. This description is from the type specimen, No. 2276, Coll. Bost. Soc. Nat. Hist. Other specimens vary in their measurements as follows: Wing, $4\frac{3}{8}$ to $4\frac{5}{8}$ in.; tail, $4\frac{3}{8}$ to $4\frac{5}{8}$ in.; bill, $1\frac{1}{4}$ to $1\frac{1}{2}$ in.

There are three types of this species from the Lafresnaye collection before me, two of which are *D. triangularis*, and the third is *D. erythropygia* Sclat. Whether this last came from Colombia with the others, I have no means of ascertaining, as no locality was given upon any of Lafresnaye's types. That author evidently did not perceive that he had two allied species in his possession. There is no doubt, however, which of the three specimens Lafresnaye considered as *triangularis*, as his description and figure, poor as the latter is, point conclusively to the bird without the cinnamon rump, and with the throat feathers margined with a dark line and not spotted.

Dendrornis erythropygia.

Dendrornis triangularis SCLAT. Proc. Zoöl. Soc. 1856, p. 289 (nec LAFRES.).

Dendrornis erythropygia SCLAT. Proc. Zoöl. Soc. 1859, p. 366.—SALV. Proc. Zoöl. Soc. 1870, p. 193.

Dendrornis erythropygia aequatorialis BERLEP. & TACZ. Proc. Zoöl. Soc. 1883, p. 563.—REICH. & SCHAL. Jour. für. Ornith. 1886, p. 91.

Habitat.—Mexico, Jalapa (De Oca), Guatemala, Costa Rica, Veragua (Salv.), Panama (Lion Hill, near Aspinwall, McLeannen), Chimbo, Ecuador (Stolzmann).

Top of head and nape olive brown, each feather with a small apical light buff spot and a terminal blackish brown margin. Back olive brown each feather with a conspicuous, rather elongated, buffy white spot near the tip. Lower back and upper tail-coverts cinnamon-red. Throat ochraceous, with a small dark olive spot at the tip of each feather, these spots becoming terminal bars on the lower part of the throat. Entire under-parts dark olive, with a large pale yellow ovate spot at the tip of each feather. Wings and tail cinnamon, the tail slightly the darker in coloring. Bill: maxilla dark brown; mandible yellowish white. Feet black. Total length, $9\frac{5}{8}$ in.; wing, $4\frac{3}{4}$ in.; tail, $4\frac{7}{8}$ in.; bill, $1\frac{1}{4}$ in. Ex Jalapa, Sp. Other examples vary as follows: wing, $4\frac{5}{8}$ to 4 in.; bill, $1\frac{1}{4}$ to 1 in.

The range of this species, as defined by some writers, seems peculiar. It goes from Mexico on the north (the type and the bird above described both having been procured at Jalapa) through Guatemala, possibly Honduras and Nicaragua, although I have not seen specimens from those countries, and the Isthmus of Panama, whence thoroughly typical specimens were obtained by McLeannen. The typical form does not seem to be found in Costa Rica. It is apparently very distinct from *D. triangularis*, and it is somewhat surprising that so keen an ornithologist as Lafresnaye should not have perceived that he had two species before him.

Dendrornis punctigula.

Dendrornis punctigula RIDGW. Proc. U. S. Nat. Mus. Vol. XI, p. 544 (1888).—SCLAT. Ibis, 1889, p. 352.

Habitat.—Costa Rica, Colombia, Truando (Schott).

The only difference I can see between specimens from Costa Rica and those of *D. erythropygia* from all localities, is that the back is nearly uniform in its coloration with narrow whitish yellow stripes on the upper portion instead of the conspicuous spots seen on Sclater's species. My material is not sufficient (I have only eleven specimens from Costa Rica), to enable me to determine the value of the claim that this bird represents a distinct species. The fact that it is apparently surrounded by *D. erythropygia* on the north and south, and that it also appears in Colombia, as I have a specimen of the Costa Rican form from Truando collected by Schott, would seem to indicate that it

would be extremely difficult to arrange in any satisfactory manner the geographical distribution of the two forms, and I think it not unlikely that with a good series of examples the two would run into each other without leaving any definable line of separation. Mr. Ridgway refers this bird from Truando in his article on *D. punctigula* (l.c.), to *D. erythropygia* Sclat., but as it has no spots on the back, merely a few pale yellow lines, it is undoubtedly the same as the Cost Rica bird. Mr. Ridgway's identification may, however, eventually prove to be correct. At all events the bird from Costa Rica separated by Mr. Ridgway is not restricted to that country, as is shown by the Truando specimen. It remains therefore for some one with better material at hand than I at present possess, to fix the status of the form called *D. punctigula*.

Dendroornis obsoletus.

Dendrocolaptes obsoletus ILLIG. LICHT. Abhand. Königl. Akad. Wissens. 1818, p. 205, No. 10.—LICHT. Berlin, Abhand. 1819, p. 203, 1821, p. 265.

Picolaptes obsoletus LAFRES. Rev. Mag. Zool. 1850, p. 371.

Nasica obsoletus LAFRES. Rev. Mag. Zool. 1850, p. 423.

Habitat.—Para, Brazil.

“Rostro recto, valde compresso, cultrato, albicante, gula maculisque guttata capit is, colli, dorsi et pectoris sordide albo-flavescensibus; digitis pro mole tenerrimis; gonyde porrecta, culminis apice sensim deflexo. Longit. tota, 8 pollices.”

I do not know this bird.



RECENT LITERATURE.

Salvin and Godman's Biologia Centrali-Americanana—Aves.*—Volume I of this great work, the first signature of which bears date of September,

* [Temporary Titlepage.] | Biologia | Centrali-Americanana. | — | Aves. | Vol. I. | By | Osbert Salvin, M. A., F. R. S., &c., | and | Frederick DuCane Godman, F. R. S., &c. | = | 1879-1887.

For a previous notice of this work (Parts I-X) see Bulletin Nuttall Ornithological Club, Vol. VI, No. 3, July, 1881, pp. 174-176.